EUROPEAN COMMISSION
Information Society and Media Directorate General

Lisbon Strategy and Policies for the Information Society
Lisbon Strategy and i2010

Use of Computers and the Internet in Schools in Europe 2006

Country Brief: Finland

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Key findings

All Finnish schools use computers for teaching and have internet access. A very high 90% use the internet via a broadband connection. With this figure Finland ranks at number 6 of the 27 countries participating in the survey.

87% of primary schools have a broadband internet connection. The penetration is highest among upper secondary schools, with 99%.

77% of the Finnish schools using computers for teaching use them in classrooms with the highest percentage of 80% being achieved in lower level schools.

In a very high 85% of schools, ICT is fully integrated into the teaching of most subjects.

A high 85% of Finnish classroom teachers have used computers in class in the 12 months prior to the survey with highest usage figures in primary schools (88%).

Finnish teachers do not seem to be the most frequent and intensive ICT users in class in Europe. A substantial majority (69%) of these teachers using computers use them in less than 10% of all lessons. Only 7% state that they use computers in more than half of their lessons. This puts Finland only at rank 24 of the most intensive ICT users in class among the European countries.

Teachers in vocational schools use computers in class much more frequently than their colleagues in general education.

Younger and older teachers (indicator used here: years of teaching experience) use ICT in class to a rather similar extent.

With 85% of teachers using ICT in class and also the more experienced, i.e. older teachers using ICT intensively, Finland ranks among the top-performers in Europe. Also, only 15% of teachers do not use computers in class in Finland. When asked for the most important barrier, 48% state a lack of computers in their schools as an important barrier. This seems to the most problematic in primary schools (51%) and least in vocational schools (34%). This, however, results in a situation where the statement "lack of equipment in school" is expressed by only 7% of all Finnish teachers (15% non-users multiplied with 48% of teachers agreeing to this item).

4% of all teachers but 24% of those not using ICT are not convinced of any benefits of using computers in class – the third highest figure in Europe. Only the teachers not using ICT in Germany and the Czech Republic are more sceptical as to the benefits ICT use can reveal in schools.

Surprisingly, a substantial 24% also express the opinion that teachers lack the necessary skills to utilize computers in their teaching, the fifth highest figure in Europe.

A rather high 14% of the teachers report a lack of interest in ICT use in class, placing Finland at rank 9 in Europe.

With 34% of the teachers belonging to the group of teachers with sufficient ICT access, ICT skills and motivation to ICT use in class, Finland only ranks at 16th, placing the country at a rather low position among the European countries.

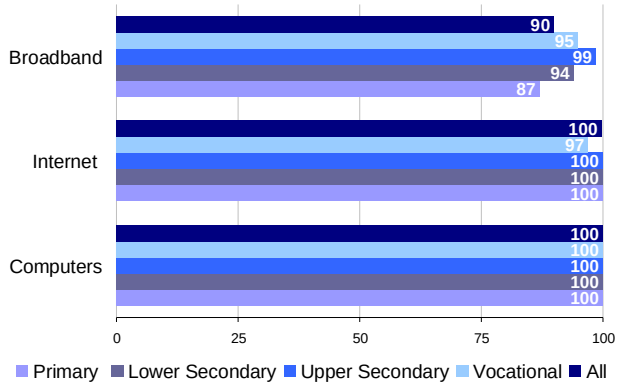
Despite all the very positive results on ICT use in schools in Finland, it appears as if there is some scope for (policy) actions addressed to an improvement of the teacher's interest in and motivation for using ICT in class in Finland.

ICT Equipment and Internet in Schools

All Finnish schools now use computers for teaching and have internet access. A very high 90% use the internet via a broadband connection. With this figure Finland ranks at number 6 of the 27 countries participating in the survey.

87% of primary schools have a broadband internet connection. The penetration is highest among upper secondary schools, with 99%.

Percentage of Schools Using Computers, Internet Connection, and Broadband Internet Access According to School Type in Finland 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Computers: Q6; Internet, Broadband: Q9. See questionnaire for exact wording.*

There is also some variation – although at a very high absolute level - with regard to broadband access between urban and rural areas: 96% of schools in densely populated

areas have broadband access compared to 88% of schools in thinly populated areas.

A very high 86% of schools have a website, 95% offer e-mail to teachers, and 32% do so to pupils.

77% of the Finnish schools using computers for teaching use them in classrooms with the highest percentage of 80% being achieved in lower level schools.

Computers in the school library are more or less restricted to upper level schools and probably an add-on to the very good ICT equipment of Finnish schools in classrooms and computer labs.

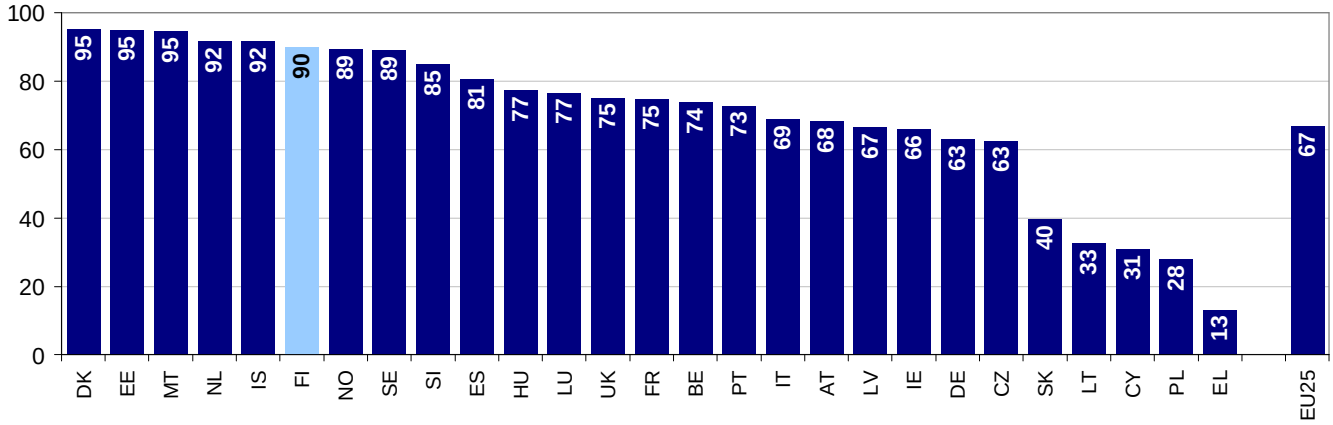
Those schools with a broadband connection to the internet are much more likely to have a more sophisticated ICT infrastructure including a school website, the use of a LAN or the availability of an intranet.

The use of Computers and the Internet in Schools

Computers are used for various purposes and as part of teaching different subjects in schools but rarely as a separate subject, and then only very widely in upper level schools.

Computer sciences are taught as a separate subject only in 37% of Finnish schools. Primary schools hardly teach it as a separate subject (19%). The highest figures are reached in vocational schools (83%) and upper secondary schools (84%).

Percentage of Schools with Broadband Internet Access in Europe 2006



Source: *LearnInd HTS 2006;* ***Base:*** *All schools;* ***Question:*** *Q9. See questionnaire for exact wording.*

ICT equipment in Finnish schools 2006

			Educational Level (FI)				Type of locality (FI)		Internet Access (FI)	
	Total FI	Total EU25	Primary	Lower secondary	Upper secondary	Vocational	Densely populated and Intermediate	Thinly populated	Narrow-band	Broadband
Computers per 100 pupils [a]	16.8	11.3	12.2	12.3	*17.5**	*22.2**	16.9	16.7	*16.8**	16.8
... of which internet connected	16.2	9.9	11.3	11.9	*17.2**	*21.7**	16.8	15.5	*14.2**	16.5
Percentage of schools having...										
Computers for teaching [b]	100.0	98.7	100.0	100.0	*100.0**	*100.0**	100.0	100.0	*100.0**	100.0
Internet access [c]	99.7	96.2	100.0	100.0	*100.0**	*97.0**	100.0	99.6	*100.0**	100.0
Broadband internet access [d]	89.9	66.9	87.0	94.0	*98.5**	*94.8**	95.7	87.9	*0.0**	100.0
A website [e]	86.1	63.0	81.6	95.9	*100.0**	*97.0**	97.2	82.3	*62.3**	89.0
An e-mail address for the majority of teachers [f]	95.0	65.2	93.5	99.1	*99.9**	*97.0**	95.6	94.8	*89.2**	96.0
An e-mail address for the majority of pupils [g]	33.2	23.5	26.5	31.1	*47.1**	*75.5**	60.8	23.7	*26.7**	34.0
A LAN [h]	50.4	55.2	44.2	55.7	*54.6**	*79.7**	50.8	50.3	*37.2**	52.0
An intranet [i]	35.7	40.8	29.5	47.2	*33.8**	*68.5**	51.8	30.2	*19.7**	37.6
An external support or maintenance contract [j]	35.5	47.1	33.4	41.9	*36.1**	*47.8**	44.1	32.6	*37.4**	35.5
Percentage of schools using computers for education in…										
Computer labs [k]	73.7	80.5	64.3	95.1	*96.7**	*90.9**	91.5	67.7	*43.8**	76.9
Classrooms [l]	76.9	61.4	79.8	80.4	*76.4**	*58.2**	78.0	76.5	*77.0**	76.8
School library [m]	14.3	33.4	8.6	17.4	*35.3**	*41.4**	24.4	10.8	*8.8**	14.9
Other locations accessible for pupils [n]	16.3	27.0	9.4	12.4	*44.7**	*45.8**	18.6	15.5	*10.4**	17.0

Source: *LearnInd HTS 2006;* ***Base:*** *a: all pupils; b-j: all schools, k-n: schools using computers for educational purposes for pupils (cf. index b);* ***Question:*** *a: Q4, Q6, Q7; b: Q6; c: Q9; d: Q9; e-j: Q12; k-n: Q8. See questionnaire for exact wording.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Use of computers in class in Finnish schools 2006

Assessments of the head teacher		Total FI	Total EU25	Educational Level (FI)				Type of locality (FI)		Internet Access (FI)	
				Primary	Lower secondary	Upper secondary	Vocational	Densely populated and Intermediate	Thinly populated	Narrow-band	Broadband
Computer sciences taught as separate subject	Agree	37.1	54.7	18.9	74.8	84.1	82.8	50.0	32.7	13.9	39.8
	Disagree	62.4	43.7	80.5	23.0	15.2	17.2	48.5	67.2	86.1	59.7
	Don't know	0.5	1.6	0.6	2.2	0.6	0.0	1.5	0.1	0.0	0.5
Computers and the internet are											
integrated into teaching of most subjects	Agree	84.6	75.3	80.8	88.3	92.2	93.9	89.7	82.8	71.4	86.0
	Disagree	15.4	24.1	19.2	11.7	7.8	6.1	10.3	17.2	28.6	14.0
	Don't know	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
used for teaching traditional subjects or basic skills	Agree	80.0	75.8	82.7	80.4	66.4	78.8	84.1	78.6	77.0	80.3
	Disagree	18.6	22.8	17.3	17.2	33.4	12.6	14.1	20.1	23.0	18.1
	Don't know	1.4	1.4	0.0	2.4	0.1	8.6	1.8	1.3	0.0	1.6
used for teaching foreign languages	Agree	72.9	56.6	68.0	86.4	80.0	81.5	79.9	70.5	65.1	73.7
	Disagree	25.4	40.1	29.6	11.7	20.0	18.5	18.5	27.7	28.0	25.2
	Don't know	1.7	3.3	2.4	1.9	0.0	0.0	1.6	1.8	6.9	1.2
used for teaching students with special needs/ handicaps	Agree	76.5	71.7	81.8	85.3	59.5	45.0	74.6	77.1	89.5	75.3
	Disagree	13.5	23.7	11.5	12.5	19.9	25.2	12.9	13.7	10.5	13.5
	Don't know	10.1	4.6	6.8	2.2	20.5	29.9	12.6	9.2	0.0	11.2

Source: *LearnInd HTS 2006;* ***Base:*** *All schools using computers for educational purposes for pupils;* ***Question:*** *Q13: "To what extent do you agree or disagree with the following statements regarding the educational use of computers and/or the internet in your school?"*

In a very high 85% of schools, ICT use is fully integrated into the teaching of most subjects. Primary (81%) and lower secondary schools (88%) use them slightly less when teaching school subjects; the highest ICT usage takes place in upper secondary (92%) and vocational schools (94%) according to the statements made by Finnish head teachers.

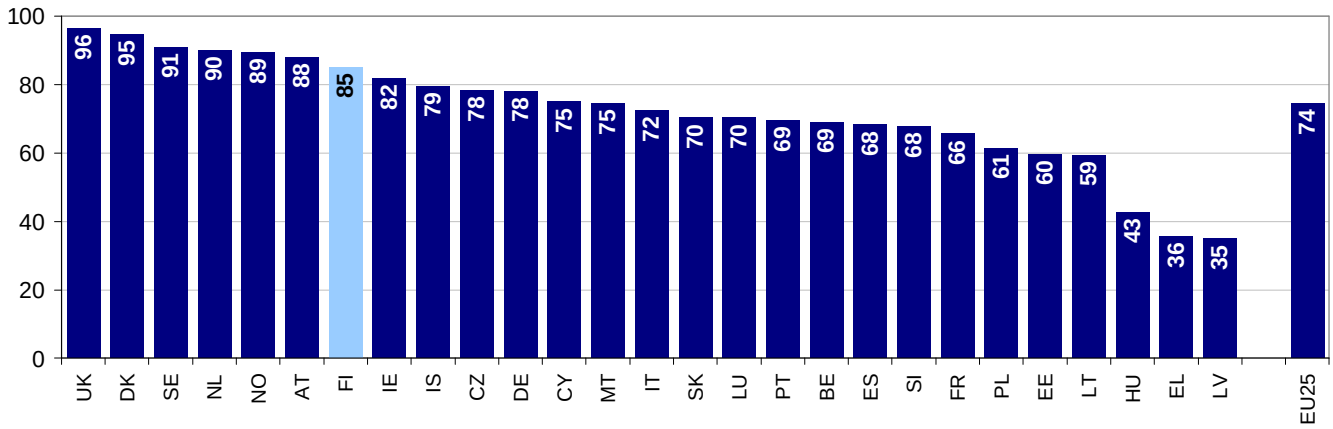
A high 85% of Finnish classroom teachers have used computers in class in the 12 months prior to the survey, with little variation across school types with highest usage figures in primary schools (88%). For most teachers, this includes not only using a computer for presentation purposes but also the use of computers by pupils in class.

Finnish teachers do not seem to be the most frequent and intensive ICT users in class in Europe. A substantial majority (69%) of these teachers using computers use them in less than 10% of all lessons. Only 7% state that they use computers in more than half of their lessons. This puts Finland only at rank 24 of the most intensive ICT users in class among the European countries.

Teachers in vocational schools use computers in class much more frequently than their colleagues in general education with 57% using computers in more than a quarter of their lessons compared to for instance just 10% of primary school teachers. In the latter almost 80% belong to the group of rather infrequent users using ICT only in up to 10% of their lessons.

Finnish teachers using computers do not restrict themselves to a particular source of information but use a multitude of different material from a variety of sources for teaching purposes which in most categories is above the European average. They are also very active (91%) in searching for material themselves in the internet. This is the key source of learning material and shows a very proactive behaviour of Finnish teachers.

Percentage of teachers who have used computers in class in the last 12 months (2006)



Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7. See questionnaire for exact wording*

Teachers' use of computers in class in Finland 2006

Percentage of teachers who ...	Total FI	Total EU25	Educational Level (FI)				Type of locality (FI)			Years of teaching experience (FI)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...have used computers in class[1]	85.1	74.3	88.0	77.1	80.5	81.4	79.7	83.9	86.3	86.5	83.8	82.9	87.2
...use a computer in class to present or demonstrate	64.7	63.4	65.5	60.4	67.1	71.7	68.5	70.8	63.1	66.3	72.2	61.8	62.5
...have pupils use a computer in class	78.8	66.3	82.0	72.2	72.3	77.6	69.8	82.3	80.0	80.7	75.4	78.5	80.1

Source: *LearnInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *Q7 "How have you used computers and/or the internet for work in the last 12 months?"*

Frequency of computers use in class Finland 2006

Percentage of all teachers *using computers in class* who ...	Total FI	Total EU25	Educational Level (FI)				Type of locality (FI)			Years of teaching experience (FI)			
			Primary	Lower secon-dary	Upper secon-dary	Voca-tional	Densely popu-lated	Inter-mediate	Thinly popu-lated	<5 y	5-9 y	10-19 y	20+ y
...use computers in 5% and less of all lessons	42.6	18.5	47.5	38.6	27.6	18.1	32.7	52.3	42.9	51.8	43.0	39.0	41.9
in 6 to 10% of lessons	25.7	22.5	29.6	29.1	5.5	8.9	30.3	16.3	26.3	22.1	21.9	26.0	28.8
in 11 to 24% of lessons	14.4	22.2	13.2	15.2	25.4	16.2	14.8	11.8	14.8	10.3	16.1	18.8	11.5
in 25 to 50% of lessons	10.8	20.2	8.1	13.4	9.8	22.2	12.7	12.3	10.2	3.6	13.7	12.5	10.4
more than 50% of lessons	6.5	16.5	1.5	3.8	31.7	34.6	9.5	7.4	5.9	12.1	5.3	3.7	7.4

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class, "don't know" answers excluded;* ***Question:*** *Q9 "For what percentage of time have you used computers and/or the internet in class when teaching your main subject(s) in the past 12 months?"*

Younger and older teachers (indicator used here: years of teaching experience) use ICT in class to a rather similar extent. The figures on the most intensive use (ICT use in more than 25% of the lessons) vary between 16% by the teachers with less than five years teaching experience to 18% of those with more than 20 years teaching experience.

15% of teachers in Finland do not use computers in class. When asked for the most important barrier, 48% state a lack of computers in their schools as an important barrier. This seems to the most problematic in primary schools (51%) and least in vocational schools (34%).

This, however, results in a situation where the statement "lack of equipment in school" is expressed by only 7% of all Finnish teachers (15% non-users multiplied with 48% of teachers agreeing to this item).

4% of all teachers but 24% of those not using ICT are not convinced of any benefits of using computers in class – the third highest figure in Europe. Only the teachers not using ICT in Germany and the Czech Republic are more sceptical as to the benefits ICT use can reveal in schools.

Surprisingly, a substantial 24% also express the opinion that teachers lack the necessary skills to utilize computers in their teaching, the fifth highest figure in Europe.

Finally, a rather high 14% of the teachers also report lack of interest in ICT use in class which places Finland at rank 9 in Europe.

It appears there is some scope for (policy) actions addressed to an improvement of the teacher's interest and motivation for using ICT in class in Finland.

Source of educational material used in class in Finland 2006

Percentage of all teachers *using computers in class*[2] who ...	**Total FI**	**Total EU25**	**Educational Level**				**Type of locality**		
			Primary	**Lower secondary**	**Upper secondary**	**Vocational**	**Densely populated**	**Inter-mediate**	**Thinly populated**
...use material they have searched the internet for	90.9	82.7	91.4	90.9	93.7	88.7	92.0	94.0	90.2
...use existing online material from established educational sources	77.7	74.2	81.6	80.7	65.1	52.1	83.2	73.5	77.3
...use material that is available on the school's computer network or database	54.2	63.1	53.9	45.2	49.0	65.3	65.1	61.8	51.1
...use electronic offline material (such as CD ROMS)	70.7	83.0	74.2	65.2	70.8	64.5	60.7	69.6	72.7
...use other learning material when using computers in class	4.0	8.8	3.8	7.2	1.9	3.0	5.8	7.0	3.3

Source: *LearnInd CTS 2006;* ***Base:*** *Teachers using computers in class;* ***Question:*** *Q10 "Which of the following types of materials have you used when teaching your main subject(s) with the aid of a computer and/or the internet?"*

Barriers to computer use in class in Finland 2006

Percentage of all teachers ***not*** *using computers in class*	Total FI	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Lack of computers	47.6	48.8	*51.0**	*48.6**	*48.2**	*34.3**	*37.8**	*62.5**	47.9
Lack of adequate content/material	18.8	20.3	*18.3**	*17.3**	*29.9**	*18.8**	*25.8**	*11.0**	18.0
Lack of content in national language	1.0	8.6	*0.0**	*0.0**	*6.4**	*6.0**	*0.0**	*0.0**	1.4
Lack of adequate skills of teachers	24.2	22.5	*28.5**	*20.0**	*24.0**	*26.3**	*44.3**	*22.4**	18.6
No or unclear benefits	24.2	16.2	*25.6**	*26.1**	*39.0**	*18.5**	*34.2**	*18.2**	22.3
Lack of interest of teachers	13.5	8.9	*15.6**	*9.6**	*18.6**	*14.0**	*15.1**	*7.2**	14.1
Subject does not lend itself to being taught via computers	25.3	24.4	*18.7**	*25.4**	*27.8**	*57.1**	*34.7**	*22.0**	23.1
Other	36.8	21.3	*35.2**	*33.5**	*46.9**	*30.8**	*19.0**	*48.9**	39.9

Source: *LearnInd CTS 2006;* ***Base:*** *all teachers not using computers in class;* ***Question:*** *Q12: "Why do you not use computers and/or the internet when teaching in class?"* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

Comparison of the situation in 2001 and 2006[3]

In Finland the percentage of schools using computers for educational purposes had already reached the 100% level in 2001.

Today, as in 2001, one hundred pupils have to share 17 computers. This puts Finland at rank 7 in Europe.

Schools have continued to move over to broadband. 90% (EU25: 67%) of the schools in Finland are connected to the internet via a broadband connection (this includes DSL connections) in 2006. The figure for DSL connections for 2001 was 51% (EU15: 5%).

Schools have also strongly increased the already high quality of ICT use in the past: while in 2001 77% (EU15: 44%) of the schools in Finland had their own website, its now 86% (EU25: 62%). Also the use of a LAN – which was used by 28% (EU15: 47%) of the Finnish schools – is now up to 50% (EU25: 54%).

Attitudes on the Usefulness of ICT use in Teaching

Computers and the internet have been in Finnish schools for some time and their use is steadily improving.

The share of teachers in Finland – but also in the European Union in general – who believe that computers and the internet should not at all be used in schools, is very low and below 1%.

Finnish teachers are positive about the different purposes for ICT use in teaching and achieve high figures (above the European average) on attitudes regarding the use of ICT for letting pupils do exercises and practise (90%), letting pupils retrieve information in a self-directed manner (89%) and for collaborative and productive work by pupils (79%).

Attitudes on the Usefulness of ICT use in Teaching in Finland 2006

Percentage of teachers saying computers/internet should be used for …	Total FI	Total EU25	Educational Level				Type of locality		
			Primary	Lower secondary	Upper secondary	Vocational	Densely populated	Inter-mediate	Thinly populated
Letting pupils do exercises and practise	89.8	79.9	90.7	84.7	87.6	92.8	89.0	89.1	90.0
Letting pupils retrieve information in a self-directed manner	88.8	85.0	85.8	90.3	97.3	97.8	89.0	90.4	88.6
Teaching about office tools	57.9	61.3	57.0	51.2	63.7	73.4	55.7	53.8	58.9
Collaborative and productive work by pupils	79.4	80.5	80.0	73.6	85.0	80.5	78.7	82.1	79.2
Computer/internet should not be used for any of these in teaching	0.5	0.6	0.6	0.7	0.0	0.0	1.3	0.0	0.5

Source: LearnInd CTS 2006; **Base:** all teachers; **Question:** Q13: "What do you think for what computers and the internet should be used for in teaching?"

Access, Competence and Motivation for Using ICT and the Internet in Schools

Access

The majority of Finnish teachers are more or less satisfied with the technical access means at their schools: 71% state that their school is well equipped with computers and 84% express the opinion that their internet connection is fast enough. However, 61% wish there were better support and maintenance actions taken.

In terms of content a 48% state problems with respect to finding adequate learning materials and 23% argue that existing material are of poor quality.

Competence at using ICT

Finnish teachers feel most competent at using e-mail and using a text processor programme but are less confi-

dent with downloading and installing software and with using presentation software packages.

Based on the assessment of teachers themselves upper secondary and vocational school teachers (53%) seem to be less ICT competent than those in primary (43%) and lower secondary schools (37%).

Motivation for ICT use in Schools

77% of Finnish teachers see significant learning benefits for pupils using computers in class and say that pupils are more motivated and attentive when computers and the internet are used in class.

However, 26% - which is above the European average of 21% - do not see significant learning benefits for pupils from using ICT in class.

Teachers' access, competence and motivation for using ICT in class 2006

Percent of teachers agreeing or strongly agreeing:	Total FI	Total EU25	Educational Level				Subject of teaching					
			Primary	Lower secondary	Upper secondary	Vocational	General primary	Literature and languages	Humanities and social sciences	Science, maths, computer sciences	Physical, artistical, crafts education	Vocational education
Access												
Our school is well equipped with computers [a]	70.8	74.2	66.1	72.5	84.1	85.0	65.6	72.9	*81.1**	72.6	67.4	89.2
The internet connection we have is sufficiently fast [b]	83.6	77.2	80.6	87.1	90.1	95.4	80.6	83.8	*88.0**	87.9	81.2	91.3
Better technical maintenance and support is required in our school [c]	61.3	64.8	64.2	55.4	55.8	52.0	64.3	65.5	*56.6**	57.6	63.5	54.3
Existing teaching materials on the Internet are of poor quality [d]	23.1	29.9	19.3	23.5	38.9	43.3	16.6	28.0	*27.6**	29.9	*23.3**	39.3
It is hard to find adequate learning materials for teaching [e]	47.8	38.7	46.8	47.0	51.5	57.5	47.7	39.8	*44.8**	49.7	*53.1**	56.2
Motivation												
Pupils are more motivated and attentive when computers and the internet are used in class [f]	76.8	86.3	77.1	76.4	78.6	77.4	75.8	81.3	*79.2**	79.8	*71.5**	71.9
Using computers in class does not have significant learning benefits for pupils [g]	26.9	20.7	26.4	31.7	28.3	19.5	26.5	28.2	*26.1**	28.7	*24.1**	27.6
Competence												
Teachers in our school do not have sufficient computer skills [h]	43.0	42.0	43.3	37.2	52.5	52.7	43.3	42.5	*32.2**	42.9	*43.2**	50.1
Competence / computer skills (Percentage of teachers who feel very confident at...)												
Using text processors [i]	52.6	65.0	51.3	54.8	58.7	53.6	53.0	44.6	*37.1**	58.4	*62.0**	43.7
Creating electronic presentations [j]	21.7	34.0	18.4	21.5	36.1	41.6	18.7	16.0	*14.1**	35.6	*24.4**	27.1
Using e-mail [k]	77.4	65.9	76.5	77.2	87.3	79.2	77.4	76.3	*71.3**	77.4	*77.2**	74.7
Downloading and installing software [l]	23.1	35.8	22.0	22.8	32.3	35.3	22.4	9.9	*6.2**	38.8	*25.6**	25.3

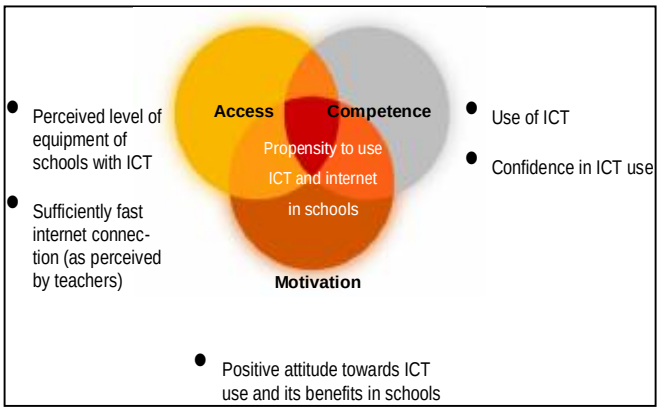
Source: *LearnInd CTS 2006;* ***Base:*** *a-h All teachers; i -l Teachers using computers in class* ***Question:*** *a-h Q14, i-l Q11.* ***Notes:*** *"xx.x*": based on at least 10 and less than 50 cases.*

ICT Readiness of Teachers – the ACM Model

The ACM model as developed by Viherä and Nurmela (2001)[4] was applied in LearnInd to generate a typology according to the "propensity to the use of computers and internet by teachers in classroom situations at schools".

The typology in the figure below takes account of the three main categories of preconditions which need to be given for a school to make use of computers and the internet in the teaching process in classrooms, computer labs etc.

The Access-Competence-Motivation Model



These are: access (to computers and the internet at school), competence (in using the computer software and the internet, and applying it for teaching purposes), and motivation (gauged through the attitude that using computers in classrooms results in significant learning benefits).

Any attempt to group the classroom teachers according to their propensity to becoming users of computers and the internet in their teaching processes needs to take account of these three dimensions. In the present application of the ACM model data from the Classroom Teacher Survey (CTS) was used. Therefore "access" for instance is to be understood as a perceived level of computer equipment at schools and teachers' satisfaction therewith rather than an objective measure of equipment status.

38% of European teachers dispose of sufficient access to the internet at school, the necessary competence in using ICT in class and are motivated to its use. With 34% of the teachers belonging to this group, Finland ranks at 16th which places the country at a rather low position among the European countries. Overall the UK with 60% ranks top and Latvia with 15% finds itself at the very end.

The as yet insufficient internet connection in many schools and a lack of motivation of teachers for using ICT are the most critical issues for a wider uptake of computers and the internet in schools in Europe. 20% of European teachers indicate insufficient computer equipment and the

low speed of internet connection at their school as key barriers. 14% show a lack of motivation, i.e., they are of the opinion that using computers in class does not result in significant learning benefits.

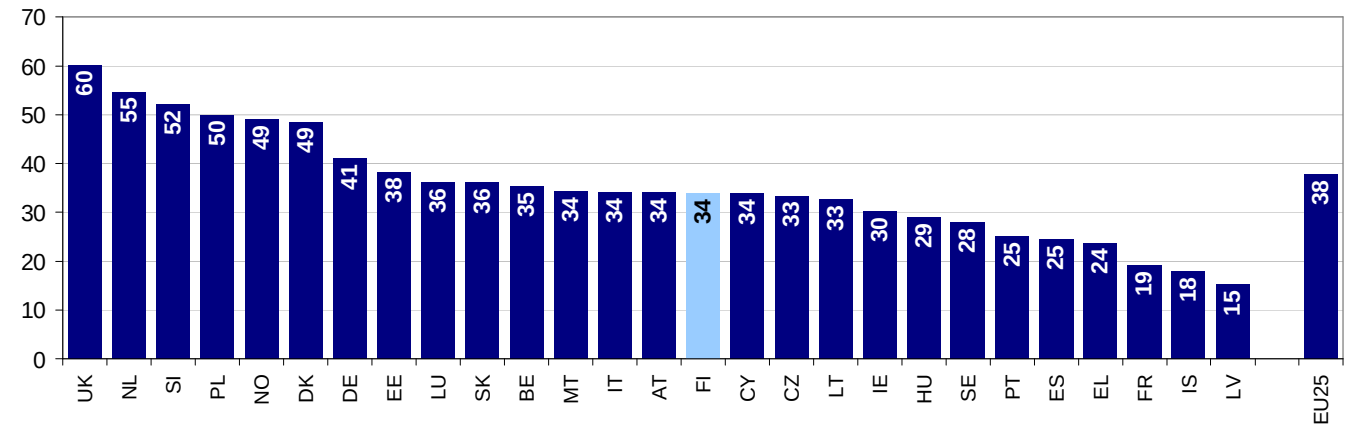
The situation in Finland is different. Access to ICT and quality of ICT do not seem to be major problems. However, the motivation for using ICT in class seems to be somewhat problematic. With 21% of Finnish teachers lacking motivation despite good ICT access and the necessary ICT skills, Finland reaches a figure which is more than four times higher than the European average. Only five other European countries show a poorer performance on "motivation" (Austria, Sweden, Hungary, Spain, and Iceland). As already mentioned above, it appears there is some scope for (policy) actions addressed to an improvement of the interest in and motivation for using ICT in class in Finland.

Access, Motivation and Competence of Teachers for Using ICT in Schools in Finland 2006

FI	EU25	Access	Competence	Motivation
4.1	4.3	~~Access~~	~~Competence~~	~~Motivation~~
4.5	3.9	**Access**	~~Competence~~	~~Motivation~~
13.1	9.7	~~Access~~	**Competence**	~~Motivation~~
2.1	5.0	~~Access~~	~~Competence~~	**Motivation**
20.6	13.7	**Access**	**Competence**	~~Motivation~~
4.3	4.8	**Access**	~~Competence~~	**Motivation**
17.4	20.7	~~Access~~	**Competence**	**Motivation**
34.0	37.9	**Access**	**Competence**	**Motivation**
100.00	100			

Percentage of teachers. ***Source:*** *LeanInd CTS 2006;* ***Base:*** *All teachers;* ***Question:*** *See endnote* [5]

ICT Readiness of Teachers in Finland: Percentage of Teachers Fully Ready to use Computers in Class (ACM Indicator) 2006



Source: *LeanInd CTS 2006;* ***Base:*** *All teachers.* ***Question:*** *See endnote 5*

ANNEXES

Methodology Report

Universe / Sample population

In order to assure the comparability of school levels in all countries UIS-OECD-EUROSTAT "Mapping of national education programmes to ISCED 97 for school academic/year 2002/2003" [6] was used for composing the sample frame. Based on this, each country divided its school system into ICSED codes and made different combinations that existed in its country.

Sampling frame and method

The sample was composed using official databases, which contained contact data of schools. In the majority of countries the sample was drawn from a database received from the Ministry of Education.

For each country a separate template of sample frames was composed by TNS Emor. These templates contained data about school types across regions as well as location type. School types were defined based on the ISCED codes provided in UIS-OECD-EUROSTAT. Location type distribution was made according to the Eurostat type of locality classification which differentiates densely populated, intermediate and thinly populated municipalities[7]. Apart from that, each country was divided into 3-7 regions depending on the size of a country.

Based on the data provided by countries, TNS Emor composed quotas for each country. Two level stratification was used – quotas for first stage, random sample for second. The quotation for region by school type and location type was endorsed. Simple random selection was conducted by the local agency or the local source of the contact base. Both private and public schools were included in the sample. It was also obligatory to include schools of other teaching languages than the official language of a country in the sample.

Simple random sampling was used inside a quota cell. This means that if the quota for primary schools in region1 was 100 and the total number of primary school in this region was 800, then a random sample selection was be made among those 800 schools. This covered also both private and public schools and schools of other teaching languages than the official language of a country.

No more than 50% of interviews could be made in one school level. At least 10% of respondents had to be from schools, which provided professional/vocational or combined programme of vocational and upper secondary level education (in case a country did not have special quota for those schools). It did not matter whether vocational education level was coded as ISCED 3 or ISCED 4.

There were no duplications in samples of head teacher and classroom teacher surveys. This was only allowed in countries with small universe sizes (e.g. Malta, Cyprus, Iceland, Estonia, Latvia etc) and in cases where the last quota cells were very difficult to achieve or there were not enough schools of a certain type. The priority was to include as many different schools as possible. In both surveys, 5 attempts were made before giving up and only if the respondent refused was this person not contacted again.

The CATI programme generated a randomly chosen letter. The interviewer asked for the person with a surname that started on the generated letter. If there was more than one teacher whose surname started with the selected letter, the person who was first alphabetically was chosen. If the correct person was not available, an appointment was made. At least 5 attempts were made before taking another teacher.

Only in Malta, due to instructions dictated by the Education Department, would the Head Teacher randomly select a teacher who would be available for an appointment during which they would be interviewed.

Number of interviews conducted (HTS / CTS)

Country		Head Teachers	Classroom teachers
BE	Belgium	450	807
CZ	Czech Republic	500	1000
DK	Denmark	315	848
DE	Germany	450	901
EE	Estonia	400	851
EL	Greece	500	1000
ES	Spain	518	1022
FR	France	501	869
IE	Ireland	403	626
IT	Italy	500	900
CY	Cyprus	150	600
LV	Latvia	451	902
LT	Lithuania	457	908
LU	Luxemburg	82	277
HU	Hungary	500	1000
MT	Malta	100	200
NL	Netherlands	515	890
AT	Austria	320	450
PL	Poland	500	1000
PT	Portugal	450	900
SI	Slovenia	253	460
SK	Slovakia	502	1000
FI	Finland	318	601
SE	Sweden	200	450
UK	United Kingdom	450	905
IS	Iceland	177	424
NO	Norway	494	708
TOTAL		**10456**	**20499**

Fieldwork

Fieldwork was coordinated by the TNS Emor and conducted in cooperation with its local TNS offices excluding Iceland, Cyprus, Austria, Slovenia and Malta where TNS does not have offices. In these countries partners with whom TNS had previous experience were used.

Pilot interviews prior to the regular fieldwork were conducted with 20 schools in both target groups in Estonia and Greece in February 2006, in order to test the questionnaire (structure, comprehensibility of questions).

Between March and April 2006, surveys among head teachers (head teacher survey - HTS) and classroom teachers (CTS) were carried out in 27 European countries. TNS Emor was responsible for the fieldwork.

Weighting schemes

After the fieldwork, weighting coefficients were computed using region, location type and school type.

Statistical accuracy of the survey: confidence intervals

Statistics vary in their accuracy, depending on the kind of data and sources. A "confidence interval" is a measure that helps to assess the accuracy that can be expected from data. The confidence interval is the estimated range of values on a certain level of probability of error. Confidence intervals for estimates of a population fraction (percentages) depend on the sample size, the probability of error, and the survey result (value of the percentage) itself. Further to this, variance of the weighting factors has negative effects on confidence intervals.

The calculation of confidence intervals is based on the assumption of (quasi-) infinite population universes. In practice, however, in some country and for some school levels the complete population of schools consists of only several hundred or even a few dozen of schools. In some cases, literally each and every school within a country-school type cell was contacted and asked to participate in the survey. This means that it is practically impossible to achieve a higher confidence interval through representative school surveys in which participation is not obligatory.

Country Background Data

Finland is a thinly populated country with one of the lowest population growth rates across Europe, an inconsiderable infant mortality rate and an average life expectancy. There is a high amount of public expenditure on education, and investment in tertiary education is at one of the top ranks among EU countries.

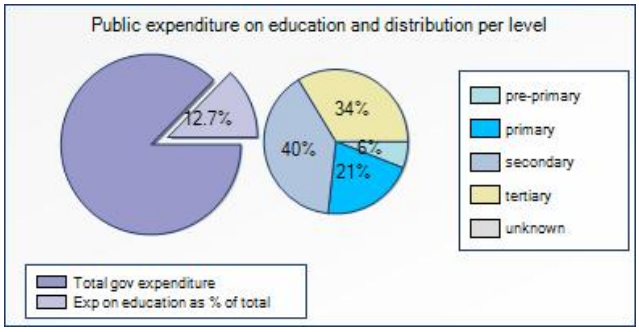
General Population Data for Finland 2002/03[8]

Total population (000)	5,197
Annual population growth rate (%)*	0.2
Population 0-14 years (%)	18
Rural population (%)*	41
Total fertility rate (births per woman) *	1.7
Infant mortality rate (0/00) *	3
Life expectancy at birth (years) *	78
GDP per capita (PPP) US$ *	26,580
GDP growth rate (%)*	2.3
* World Bank World Development Indicators	

Resources for Education in Finland 2002/03

Pupil / teacher ratio (primary)	16
Public expenditure on education :	
as % of GDP	6.4
as % of total government expenditure	12.7
Distribution of public expenditure per level (%):	
pre-primary	6
primary	21
secondary	40
tertiary	34
unknown	-

Resources for Education in Finland 2002/03



The Educational System in Finland[9]

In 2004, there were 593,000 pupils in compulsory education. Finland has two national languages, Finnish and Swedish. Approximately 7% of students in basic and upper secondary education attend a school where Swedish is the language of instruction. Both language groups have their own institutions also at higher education level. In addition there are educational institutions where all or at least some instruction is provided in a foreign language (most commonly English). Local authorities are also required to organise education in the Saami language in the Saami-speaking areas of Lapland. Care is also taken to ensure educational opportunities for Romany and other minorities as well as for people who use sign language.

Education is the responsibility of the Ministry of Education. The National Board of Education works with the Ministry to develop educational aims, content and methods for primary, secondary and adult education. In addition, each of the six Finnish Provinces has an Education and Culture Department that deals with these issues. Local administration is the responsibility of the local authorities (municipalities), which play a prominent role as education providers.

Most institutions providing basic and upper secondary level education are maintained by local authorities or joint municipal boards (federations of municipalities). In 2004, 98% of pupils were in publicly funded basic education and 92% and 87% of students attended publicly funded general and vocational upper secondary education respectively. Private institutions are under public supervision: they follow the national core curricula and qualification guidelines confirmed by the Finnish National Board of Education. They also receive the same level of public funding as publicly funded schools. Responsibility for educational funding is divided between the State and the local authorities. Of the funding for primary and secondary education, the state

subsidy averages 57% of the costs, while municipal contributions amount to an average of 43%.

Local authorities determine how much autonomy is passed to schools. The schools have the right to provide educational services according to their own administrative arrangements, as long as the basic functions, determined by law, are carried out. Polytechnics are mostly municipal or private. All universities are maintained by the State and enjoy extensive autonomy. There is no separate school inspectorate and inspection visits to schools conducted by state authorities have been abandoned. The activities of education providers are guided by objectives laid down in legislation and the national core curricula. The system relies on the proficiency of teachers in their efforts to meet the objectives laid down in the curricula. There is strong focus on both self-evaluation and external evaluation. A separate Evaluation Council for Education and Training has been operating in conjunction with the Ministry of Education since April 2003. It is responsible for planning, co-ordinating, managing and developing the evaluation of basic education and upper secondary education and training. The polytechnics and universities are responsible for the evaluation of their own operations and outcomes. In this respect, they receive support from the Higher Education Evaluation Council.

The use of ICT in Education[10]

Since 1995, the Ministry of Education has steered development of the information society in education, training and research through strategic programmes.

The Information Society Programme for Education, Training and Research 2004–2006, drawn up by the Ministry of Education, focuses on the development of citizens' information society skills, diverse use of information and communications technologies in educational institutions, establishment of effective procedures and promotion of social innovation through ICT.

The aim by the year 2007 is for all those completing their studies to be given the opportunity to obtain the basic skills and knowledge required in an information society; for at least 75% of teachers to have the skills to use ICT in teaching, and for on-line instruction to be well-established.

In line with the programme, measures have already been carried out to develop on-line instruction at all levels of education, increase broadband connections at schools and provide teachers with continuing professional education.

The Study

There is a lack of information on the actual use of ICT for learning in schools, and for supporting political action in potential future programmes. It is necessary to clarify matters such as the educational vision of heads of schools, the current impact of ICTs on teachers' practice, support and training and on other factors for success in e-learning.

The objective of the study is to obtain estimates for the eEurope 2005 indicator on e-learning "number of pupils per computer with Internet connection (broadband/non-broadband)" and relate it to other possible indicators of educational use of ICT in compulsory education (e-learning in schools). The study looks at how Information and Communication Technologies (ICT) are used in schools.

The study is a continuation of the earlier benchmarking exercise for eEurope 2002.

It involved two surveys. Firstly of head teachers to obtain information on the schools and then of teachers to focus on their use of ICTs in the teaching process

This exercise is part of the Information Society monitoring and benchmarking process for which the Commission in cooperation with the Council defined benchmarking indicators.

Country Briefs

This document has been prepared by **empirica** based on own desk research and the above mentioned primary data sources: Head Teacher Survey (HTS) 2006 and Classroom Teacher Survey (CTS) 2006 in the EU25 member states, Iceland and Norway.

Altogether 27 LearnInd Country Briefs are available in a common format, one for each member of the enlarged European Union, Norway and Iceland.

A final report has also been developed. It includes approximately 100 exhibits, more than 250 data tables and a report about the key results.

You can access and download these documents in PDF format (for free) from http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm.

More information

Check our results and achievements on: http://ec.europa.eu/information_society/eeurope/i2010/benchmarking/index_en.htm. If you wish to be provided with more details, or to receive news and updates, please contact us at: **learnind@empirica.com** or get in touch with us.

empirica Gesellschaft für Kommunikations- und Technologieforschung mbH

(Project Co-ordinator)

Oxfordstr. 2, 53111 Bonn, Germany,
Tel.: +49 228 985 30 0,
www.empirica.com

TNS Emor

Ahtri 12, 10151 Tallinn, Estonia, Tel.: +372 6268 519, Fax: + 372 6268 501

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1 Note that "in class" means during lessons while teaching and does not denote a particular location such as a classroom.

2 Base (100%) = all teachers who have used a computer in class in the last 12 months.

3 This section includes some comparisons of the Eurobarometer Flash 94/1001 and 95/102 results from 2001 with those from the LearnInd surveys from 2006. Please bear in mind that the figures are not directly comparable due to the use of slightly different approaches and methodologies.

4 Viherä, M-L, Nurmela, J (2001) "Communication Capability Is an Intrinsic Determinant for Information Age", in Futures, Volume 33, Issue 3-4:245-265.

5 Synthetic indicators: Access: Q14 (2) "Our school is well equipped with computers" and Q14 (3) "The internet connection we have is sufficiently fast ".

Competence: Q11 How confident do you feel... a) using a text processor, b) creating a presentation c) using e-mail, d) downloading and installing software. Threshold: Average of 2.5 or more on a 1-4 confidence scale

Motivation: Q14 (8); disagree to "Using computers in class does not result in significant learning benefits".

For full question wordings refer to questionnaire.

[6] http://forum.europa.eu.int/Public/irc/dsis/edtcs/library?l=/public/unesco_collection/programmes_isced97&vm=detailed&sb=Title

[7] Densely populated area refers to a set of closely related local units, each one of which having a density greater than 500 inhabitants per km2, and the total population of which being of at least 50 000 inhabitants; Intermediate area refers to a set of closely related local units that do not pertain to a densely populated area, each one of which having density greater than 100 inhabitants per km2, and where the total population is at least of 50 000 inhabitants or it refers to a set that is adjacent to a highly populated area. Thinly populated area (rural): refers to a set of closely related local units that are not part of a densely populated area, or of an intermediate area. (A set of local areas totalling less than 100 km², not reaching the required density, but entirely enclosed within a densely-populated or intermediate area, is to be considered to form part of that area. If it is enclosed within a densely-populated area and an intermediate area it is considered to form part of the intermediate area).

[8] Source: http://www.uis.unesco.org/profiles/selectCountry_en.aspx (visited 28 March 2006)

[9] Source: http://www.eurydice.org/Documents/struct2/frameset_EN.html (visited: 28 March 2006)

[10] Source: http://europa.eu.int/comm/education/policies/2010/nationalreport_en.html (visited: 9 May 2006)